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OIPE JC10 AUG 09 2004 PATENT & TRADEMARK OFFICE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/688,001
Filing Date	10/14/2000
First Named Inventor	Dobbertin
Art Unit	3653
Examiner Name	David H. Bollinger
Attorney Docket Number	2000009

Total Number of Pages in This Submission

ENCLOSURES (*Check all that apply*)

- [✓] Fee Transmittal Form
- [ ] Fee Attached
- [ ] Amendment/Reply
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- [ ] Affidavits/declaration(s)
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- [ ] Status Letter
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3 copies of Appeal Brief

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Firm or Individual	Kathleen K. Bowen Co. LPA
Signature	Kathleen K. Bowen
Date	08/09/2004

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 330

Complete if Known	
Application Number	09/688,001
Filing Date	10/14/2000
First Named Inventor	Dobbertin
Examiner Name	David H. Bollinger
Art Unit	3653
Attorney Docket No.	2000009

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☑ Deposit Account:

Deposit Account Number: 501381

Deposit Account Name: Heidelberg Digital LLC

The Director is authorized to: *(check all that apply)*

☐ Charge fee(s) indicated below ☐ Credit any overpayments

☐ Charge any additional fee(s) or any underpayment of fee(s)

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1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below		Fee Paid
Total Claims		-20** =		X	=	
Independent Claims		- 3** =		X	=	
Multiple Dependent					=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 330

SUBMITTED BY				(Complete *(if applicable)*)	
Name *(Print/Type)*	Kathleen K. Bowen	Registration No. *(Attorney/Agent)*	42352	Telephone	330-945-6931
Signature	Kathleen K. Bowen			Date	08/09/2004

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OIPE JC10
AUG 09 2004
PATENT & TRADEMARK OFFICE

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: **MICHAEL T. DOBBERTIN, HENRY P. MITCHELL Jr.** Docket No.: 2000009

Serial No.: 09/688,001 Art Unit: 3651

Filed: October 14, 2000 Examiner: David H. Bollinger

For: **PULSED AIRKNIFE CONTROL FOR A VACUUM CORRUGATED FEED SUPPLY**

Assistant Commissioner of Patents & Trademarks
Washington, D.C. 20231

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: M.S. APPEAL BRIEF, COMMISSIONER FOR PATENTS, P.O. Box 1450, ALEXANDRIA, VA 22313-1450, on

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Kathleen K. Bowen

8/9/04
Date of Signature

BRIEF FOR APPELLANT

Sir:

This brief is filed in support of the Notice of Appeal filed on June 8, 2004. This brief is in support of an appeal from the action of the Primary Examiner, mailed March 8, 2004, which resulted in the claims being more than twice rejected, as an RCE was filed on the original application on January 6, 2004.

I. THE REAL PARTY IN INTEREST

The real party in interest, upon information and belief, is Eastman Kodak Co., assignee of this application.

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II. RELATED APPEALS AND INTERFERENCES

Appellant believes there are no related interferences or appeals that will have any bearing on this appeal.

III. STATUS OF THE CLAIMS

Claims 1-5 are pending in the application; claims 1-5 have been rejected. Appeal is taken on the rejected claims.

IV. STATUS OF THE AMENDMENTS

There have been no amendments made to claims 1-5. The appealed claims are included in Appendix 1 of this brief.

V. SUMMARY OF THE INVENTION AND ITS ILLUSTRATIVE EMBODIMENT

The invention is pulsed airknife control for a vacuum corrugated feed supply. A method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle wherein the vacuum and the positive pressure air are controlled by a vacuum valve and a positive air pressure valve respectively, wherein the paper is taken away by a belt which is activated when a feed clutch is energized, comprising actuating the vacuum at the start of the feed cycle and de-actuating the vacuum when the feed clutch is de-energized, and pulsing the positive air pressure separator by actuating and de-actuating the positive air pressure separator during the feed cycle.

Referring to Figures 2-5, a sheet feed head assembly **30** is located in association with the hopper **12** so as to extend over a portion of the platform **14** in spaced relation to a sheet stack **15** supported thereon. The sheet feed head assembly **30** includes a ported plenum **32** connected to a vacuum source **31** through a vacuum valve **38,** and an airknife **40** connected to a positive pressure air source **41** through a positive pressure valve **60.** A positive pressure airjet from the airknife **40** levitates the top sheets in the supported sheet stack **15.** Vacuum at the plenum **32** is effective through the plenum ports **33** to cause the topmost levitated sheet from the stack to thereafter be

acquired at the plenum **32** for separation from the sheet stack **15**. Additional positive air pressure jets from the airknife **40** assure separation of subsequent sheets from the acquired topmost sheet (pg 4 lines 21-31).

A vacuum valve **38** (see Fig 5) is used to control the operation of the vacuum and to limit the vacuum level (pg 5 lines 1-2). When the vacuum is said to be "actuated", this means that the vacuum valve **38** is open. When the vacuum is said to be "de-actuated" this means that the vacuum valve **38** is closed (pg 5 lines 12-14).

The belts **36** are selectively driven by energizing a feed clutch (not shown), in a direction to remove the acquired sheet from the area above the sheet stack **15** and transport the sheet in the feed direction along a travel path to a downstream transport, such as a driven feed nip roller pair **50** (pg 5 lines 15-18). Accordingly when the clutch **56** is engaged, the belts **36** will be driven so as to feed an acquired sheet such that the acquired sheet is transported from the sheet stack **15** and is thereafter available for any further processing, such as receiving a reproduction from a copier or printer (pg 5 lines 23-26).

The airknife **40** comprises a first air jet arrangement **42** and a second air jet arrangement **44**. The first air jet arrangement incorporates a single nozzle **43** in fluid communication with a source of positive pressure air **41** (pg 5 lines 27-29). The nozzle **43** directs a positive pressure air stream at the sheet stack, in the center of the lead edge, to fluff the top sheets in the stack to bring the topmost sheet into association with the sheet feed head assembly **30** where it can be acquired by vacuum, at the plenum **32** (pg 6 lines 1-5). The second air jet arrangement **44** incorporates a plurality of nozzles **46** fluid communication with the source of positive pressure air **41**. The nozzles **46** are aimed slightly downstream of the aimpoint for the first air jet nozzle **43**. The purpose of the second air jet arrangement **44** is to separate any sheets adhering to the topmost sheet acquired by the sheet feed head assembly **30** (pg 6 lines 6-10).

A positive pressure air valve **60** is used to control the flow of positive pressure air through the airknife **40**. When the positive air pressure separator **40** is actuated, this means the positive air pressure valve **60** is open. When the positive air pressure

separator **40** is de-actuated, this means the positive air pressure valve **60** is closed (pg 6 lines 11-15).

Common practice for operation of a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle, is to actuate the vacuum valve **38** and the positive air pressure separator **40** at the start of the feed cycle and de-actuate the vacuum valve **38** when the feed clutch is de-energized, but leave the positive air pressure separator **40** actuated throughout the feed cycle (pg 6 lines 21-25).

According to an aspect of the invention, this method is improved upon by pulsing the positive air pressure separator **40** by actuating and de-actuating the positive air pressure separator **40** during the feed cycle (pg 6 lines 26-28).

In a preferred embodiment of the invention, the positive air pressure separator **40** is actuated when the vacuum is actuated, and de-actuated before the feed clutch is energized (pg 6 lines 29-31). In a further preferred embodiment, the positive air pressure separator **40** is actuated when the vacuum is actuated, and is de-actuated approximately 50 milliseconds before the feed clutch is energized (pg 7 lines 3-5).

According to an aspect of the invention, a method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle comprises opening the vacuum valve **38** and the positive pressure air valve **60,** then closing the positive pressure air valve **60,** next energizing the feed clutch on the belt feeder, then de-energizing the feed clutch, and finally closing the vacuum valve **38** (pg 7 lines 24-28).

VI. ISSUES ON APPEAL

A) The unobviousness of claim 5 over Yoshida et al in view of Jantsch et al.

B) The unobviousness of claims 1-4 over Yoshida et al in view of Jantsch et al as applied to claim 5, and further in view of Watkiss.

C) The unobviousness of claims 2-3 over Yoshida et al in view of Jantsch et al as applied to claim 5, and further in view of Watkiss, and further considering "mere choice or expedience".

D) The unobviousness of claims 1-4 over Yoshida et al in view of Jantsch et al as applied to claim 5, and further in view of Watkiss and further considering "mere choice or expedience".

VII. THE ART RELIED ON BY THE EXAMINER

Yoshida et al	USP 5,478,066	12/1995
Jantsch et al	USP 5,344,133	9/1994
Watkiss	USP 6,120,016	9/2000

VIII. GROUPING OF THE CLAIMS

Claims 1-4 have been rejected under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al as applied to claim 5, and further in view of Watkiss. As described in the arguments below, Appellant considers each of these claims to be separately patentable. Appellant requests that the claims be considered individually.

IX. APELLANT'S ARGUMENTS

A) **THE UNOBVIOUSNESS OF CLAIM 5 OVER YOSHIDA ET AL IN VIEW OF JANTSCH ET AL.**

Claim 5 stands rejected under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al. The Examiner's position is summarized below.

Yoshida et al shows in Fig. 34 the timed operation of a vacuum belt feeder which includes first opening a vacuum valve 13 (at c) and a positive pressure air valve 22 (at a), closing the pressure air valve (at b), driving the belt feeder (14), closing the vacuum (at d), and then turning off the drive to the belt. Further, in the embodiments of Figs. 25-28 of Yoshida et al (to which the

time chart of Figure 34 could apply) it is shown that the pressure air valve 22 does move between the open position a and the closed position b. Merely having the vacuum of Yoshida et al run until after the feed belt is de-energized would require mere choice or expedience since it would appear that the apparatus run equally well with the vacuum turned off after the de-energizing of the belt (14). Further to have the feed belt activated and deactivated by way of a feed clutch would require the mere choice of a known means of controlling the movement of the belt as made obvious by Jantsch et al. Note 56 and column 5 lines 30-46 of Jantsch et al.

Appellant pointed out that Figure 34 in Yoshida et al does not show a positive pressure air valve either opening OR closing, what it does show is the position of the positive pressure air valve switching from position a to position b. Therefore, since the positive pressure air valve of Yoshida et al in Figure 34 is never closed during the feed cycle, and since "closing said positive pressure air valve" is a limitation of Appellant's claim 5 (pg 8 line 28), claim 5 is not obvious over Yoshida et al in view of Jantsch et al. The Examiners response to this was that there were embodiments in Yoshida et al of Figs. 25-28 wherein it is shown that the pressure air valve 22 does move between the open position a and the closed position b, and that the time chart of Figure 34 could apply to these embodiments. However, the timing chart of Figure 34 could not possibly apply to the embodiments of Figs. 25-28, because applying the embodiments of Figures 25-28 to the timing chart of Fig 34 does not produce the "blow amount of nozzle 19" presented in Figure 34. For example, in Figs. 25-38, when the pressure air valve 22 is in the closed position b there would be no airflow through nozzle 19. Figure 34 clearly shows that when valve 22 is in position b that there is non-zero airflow Q1 in nozzle 19; and further that the airflow through nozzle 19 is greater when the valve 22 is in position b (closed position for Figure 25-28) than when it is position a (open position for Figure 25-28). This clearly contradicts the Examiner's position that the timing chart of Figure 34 could apply to embodiments 25-28.

The Examiner also states that "merely having the vacuum of Yoshida et al run until after the feed belt is de-energized would require mere choice or expedience since it would appear that the apparatus run equally well with the vacuum turned off after the de-energizing of the belt (14)". Appellants have requested a factual support for this conclusory statement, but the Examiner has not provided any such factual basis. This limitation has not been found in the relied upon art, thus the only basis for rejection is the Examiner's opinion. Appellants argue that this is a mere conclusion, unsupported by facts.

Thus, Figure 34 of Yoshida et al is not applicable to Appellant's claim 5 and Figure 34 of Yoshida et al could not possibly apply to the embodiments of Figures 25-28 of Yoshida et al. Further, the factual record does not support the conclusion that "merely having the vacuum of Yoshida et al run until after the feed belt is de-energized would require mere choice or expedience". For these reasons, and because the Examiner is relying on Jantsch et al only for the use of a feed clutch, claim 5 is not obvious under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al.

Appellant requests reversal of the Examiner regarding rejection of claim 5.

B) **THE UNOBVIOUSNESS OF CLAIMS 1-4 OVER YOSHIDA ET AL IN VIEW OF JANTSCH ET AL AS APPLIED TO CLAIM 5, AND FURTHER IN VIEW OF WATKISS.**

Claims 1-4 stand rejected under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al as applied to claim 5 above, and further in view of Watkiss. The Examiner's position is summarized below.

It would be obvious in order to aid in separation of the sheets from the stack to have the positive air pressure from valve 22 of Yoshida et al delivered in pulses as made obvious by Watkiss. Note air blasts from nozzles 72 and column 5 lines 6-30 of Watkiss.

As discussed above, the Examiner has interpreted Yoshida et al in a way which is not consistent with its plain meaning.

Further, as discussed above, Yoshida has an embodiment wherein the position of the positive pressure air valve switches from position a to position b, but the positive pressure air remains flowing (Fig 34), and an embodiment wherein the positive pressure air valve 22 moves between an open position a and a closed position b (Figure 25-28). The Examiner does not specify which of these embodiments he is referring to in his combination of references.

In the embodiment of Yoshida et al of Figure 34, where the positive pressure air valve switches from position a to position b, but the positive pressure air remains flowing, there is no obvious way of combining Watkiss. Would you pulse the air while the valve was in position a? Would you pulse the air when the valve was in position b? Would you pulse from position a to position b? Pulsing is not appropriate for this embodiment, as a detailed timing chart (Figure 34) for desired airflows at various times throughout the feed cycle is already presented.

In the embodiment of Yoshida et al wherein the positive pressure air valve 22 moves between an open position a and a closed position b (Figure 25-28), the valve 22 is switched to position a, then the vacuum valve is opened, then valve 22 is switched to position b "to stop the injection of the air" "At the same time" as the convey belt is actuated (see column 18 lines 1-8 and lines 37-42). In contrast, Watkiss has the positive air being pulsed "in synchronism with the operation of the vacuum device and the belt movement" (column 6 lines 38-41). Thus in Yoshida et al, the positive air is stopped at the same time the belt is actuated, and in Watkiss the positive air is turned ON at the same time the belt is actuated. Thus they directly conflict with each other, so not only is there no motivation to combine Yoshida et al and Watkiss, but it could not be done.

Claim 2 has the limitation that "said positive air pressure is de-actuated before the feed clutch is energized" (pg 8 lines 12-14) and thus is separately patentable. As discussed above, in Watkiss the positive pressure is turned ON when the belt is actuated, which directly opposes claim 2.

Claim 3 has the limitation that "when the feed rate is 110 pages per minute, wherein said positive air pressure separator is actuated when said vacuum is actuated, and said positive air pressure is de-actuated approximately 50 milliseconds before the feed clutch is energized" (pg 8 lines 15-18) and thus is separately patentable. As

discussed above, in Watkiss the positive pressure is turned ON when the belt is actuated, which directly opposes claim 3.

Claim 4 has the limitation "when the feed rate is 110 pages per minute, wherein said positive air pressure valve is closed approximately 50 milliseconds before the feed clutch being energized" (pg 8 lines 19-21) and thus is separately patentable. As discussed above, in Watkiss the positive pressure is turned ON when the belt is actuated, which directly opposes claim 4.

For these reasons, and because the Examiner is relying on Jantsch et al only for the use of a feed clutch, claims 1-4 are not obvious under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al as applied to claim 5 above, and further in view of Watkiss.

Appellant requests reversal of the Examiner regarding rejection of claims 1-4.

C) **THE UNOBVIOUSNESS OF CLAIMS 2-3 OVER YOSHIDA ET AL IN VIEW OF JANTSCH ET AL AS APPLIED TO CLAIM 5, AND FURTHER IN VIEW OF WATKISS, AND FURTHER CONSIDERING "MERE CHOICE OR EXPEDIENCE".**

Claims 2-3 stand rejected under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al as applied to claim 5 above, and further in view of Watkiss, and further considering "mere choice or expedience". The Examiner's position is summarized below.

In regard to claims 2-3 merely having the air pressure separator (at a of 22 of Fig. 34) of Yoshida et al actuated at the same time as the vacuum is actuated (at 13 c of Fig 34) would require mere choice or expedience since the apparatus of Yoshida et al could work equally well with this type of timed operation. The Examiner has made a factual observation of the modified Yoshida et al apparatus and the burden is now on Appellant to refute such observations.

Appellant respectfully submits that the Examiner's observation has not been established as fact, and there is no factual support in the record for such an observation. Appellants have twice requested a factual support for this

conclusory statement, but the Examiner has not provided any such factual basis. This limitation has not been found in the relied upon art, thus the only basis for rejection is the Examiner's opinion. Appellants argue that this is a mere conclusion, unsupported by facts.

Further, with regard to claim 2, the Examiner speaks to the limitation of having the positive air pressure separator actuated when the vacuum is actuated, however, the Examiner does not address the limitation of the "positive air pressure is de-actuated before the feed clutch is energized." If the Examiner is relying on the timing chart Figure 34 of Yoshida et al for this limitation, Appellant respectfully submits that for the reasons stated in section A above, Figure 34 of Yoshida et al is not applicable.

For these reasons, and because the Examiner is relying on Jantsch et al only for the use of a feed clutch, claims 2-3 are not obvious under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al as applied to claim 5, and further in view of Watkiss, and further considering "mere choice or expedience".

Appellant requests reversal of the Examiner regarding rejection of claims 2-3.

D) **THE UNOBVIOUSNESS OF CLAIMS 3-4 OVER YOSHIDA ET AL IN VIEW OF JANTSCH ET AL AS APPLIED TO CLAIM 5, AND FURTHER IN VIEW OF WATKISS, AND FURTHER CONSIDERING "MERE CHOICE OR EXPEDIENCE".**

Claims 3-4 stand rejected under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al as applied to claim 5 above, and further in view of Watkiss, and further considering "mere choice or expedience". The Examiner's position is summarized below.

To have the time between the closing of the valve 22 (at b) and the activation of the feed belt 14 of Yoshida et al to be approximately 50 milliseconds would require mere choice of expedience based on the timing of the feed rate of the sheets being fed. Examiner has made a factual observation of the modified Yoshida et al apparatus and the burden is on Appellant to refute such observations.

Appellant respectfully submits that the Examiner's observation has not been established as fact, and there is no factual support in the record for such an observation. Appellants have twice requested a factual support for this conclusory statement, but the Examiner has not provided any such factual basis. This limitation has not been found in the relied upon art, thus the only basis for rejection is the Examiner's opinion. Appellants argue that this is a mere conclusion, unsupported by facts.

On the contrary, claims 3-4 contain the limitation the positive air pressure is de-actuated approximately 50 milliseconds before the feed clutch is energized. Neither Yoshida et al nor Watkiss has the positive air pressure de-actuated before the feed clutch is energized. In Yoshida et al, the positive pressure air valve 22 moves between an open position a and a closed position b (Figure 25-28), the valve 22 is switched to position a to open the vacuum valve, then valve 22 is switched to position b "to stop the injection of the air" "At the same time" as the convey belt is actuated (see column 18 lines 1-8 and lines 37-42). Watkiss has the positive air being pulsed "in synchronism with the operation of the vacuum device and the belt movement" (column 6 lines 38-41). Therefore, one has the positive pressure actuated at the same time the feed clutch is energized, and one has the positive pressure de-actuated at the same time the feed clutch is energized.

For these reasons, and because the Examiner is relying on Jantsch et al only for the use of a feed clutch, claims 3-4 are not obvious under 35 U.S.C. §103 over Yoshida et al in view of Jantsch et al as applied to claim 5, and further in view of Watkiss, and further considering "mere choice or expedience".

Appellant requests reversal of the Examiner regarding rejection of claims 3-4.

IX. SUMMARY

Appellant's claimed pulsed airknife control for a vacuum corrugated feed supply (claims 1-5) is distinct and patentably defined over the cited references as applied by the Examiner. Appellant requests reversal of the final rejection in its entirety.

Respectfully submitted,

Kathleen K. Bowen
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(330)945-6931

Date: 8/9/2004

TABLE OF CONTENTS FOR APPENDICIES

What is claimed is:

1. In a method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle wherein said vacuum and said positive pressure air are controlled by a vacuum valve and a positive air pressure valve respectively, wherein the paper is taken away by a belt which is activated when a feed clutch is energized, wherein the vacuum is actuated at the start of the feed cycle and de-actuated when the feed clutch is de-energized, the improvement comprising:

pulsing the positive air pressure separator by actuating and de-actuating said positive air pressure separator during the feed cycle.

2. The method of claim 1 wherein said positive air pressure separator is actuated when said vacuum is actuated, and said positive air pressure is de-actuated before the feed clutch is energized.

3. The method of claim 1 when the feed rate is 110 pages per minute, wherein said positive air pressure separator is actuated when said vacuum is actuated, and said positive air pressure is de-actuated approximately 50 milliseconds before the feed clutch is energized.

4. The method of claim 1 when the feed rate is 110 pages per minute, wherein said positive air pressure valve is closed approximately 50 milliseconds prior to the clutch being energized.

5. A method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle wherein said vacuum and said positive pressure air are controlled by a vacuum valve and a positive air pressure valve respectively, wherein the paper is taken away by a belt which is activated when a feed clutch is energized, comprising:

opening said vacuum valve and said positive pressure air valve;

closing said positive pressure air valve;

energizing the feed clutch on the belt feeder;

de-energizing the feed clutch ; and,

closing said vacuum valve.

PULSED AIRKNIFE CONTROL FOR A VACUUM CORRUGATED FEED SUPPLY

BACKGROUND

The present invention is in the field of printers and copiers. More specifically this invention relates to a receiver sheet supply and feed apparatus, including a vacuum corrugated feeder, and a positive air pressure separator on such printers and copiers. This invention is useful for the apparatus described by the US Patent # 5,344,133 "Vacuum belt feeder having a positive air pressure separator and method of using a vacuum belt feeder " by Jantsch et al, which patent is hereby incorporated by reference in its entirety. The incorporated patent refers to a vacuum, a first positive air supply, and a second positive air supply. The first and second positive air supplies are used simultaneously and will herein be referred to collectively as the airknife.

In typical reproduction apparatus such as copiers or printers, information is reproduced on individual cut sheets of receiver material such as plain bond paper or transparencies. Such receiver sheets are stored in a stack and fed individually when copies are to be produced. The sheet feeder for the reproduction apparatus must be able to handle a wide range of sheet types and sizes reliably and without damage. Sheets must be fed individually, without misfeeds or multi-feeds.

In the vacuum corrugated belt feeder disclosed in the above patent, both the vacuum and the positive air pressure are controlled by valves. During the feed cycle, the positive air pressure valve is continuously open. The vacuum valve is opened to acquire the top sheet off the stack. After approximately 220 milliseconds (for a 110 pages per minute (ppm) feed rate), the clutch is actuated, which drives the feed belts to advance the sheet into the constantly rotating take away rollers. At a time after the lead edge of the sheet has reached the take away rollers, prior to the trail edge of the sheet reaching the edge of the ports in the vacuum plenum, the vacuum and the clutch are turned off.

The airknife airflow and velocity during the acquisition phase must be great enough to fluff the stack and pre-separate the top sheet. During the transport phase, the flow from the airknife must be high enough to create the air bearing between the sheet being fed, and the rest of the stack. However, flow that is too high during the transport phase has several undesirable effects. For example, if the flow is too high there is an increased tendency for the sheets below the top sheet to be blown back away from the lead edge. This is especially troublesome for sheets that do not have a continuous trail edge. Also, the air can deflect the lead edge of sheets with low stiffness, especially if the paper curl is down (lead edge away from the feed belts), which can lead to paper damage or jamming. The flow must not be so great as to levitate any sheets below the sheet being fed above the mechanical gate fingers along the lead edge of the paper drawer, or high enough to cause the second sheet to contact the top sheet when it is being transported off the stack. Also, if the flow is too great, it can cause the trail edge of the sheet being fed to flutter violently, which can in turn contact the sheet below it, tending to drive it forward also.

Typically, the minimum airflow of the airknife is dictated by the acquisition and separation needs and the maximum airflow of the airknife is limited by the transport phase. A method of operation is desired which will optimize the usefulness of the airknife during the acquisition and separation phase, while minimizing the detriments of the airknife during the transport phase.

SUMMARY OF THE INVENTION

A method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle wherein the vacuum and the positive pressure air are controlled by a vacuum valve and a positive air pressure valve respectively, wherein the paper is taken away by a belt which is activated when a feed clutch is energized, comprising actuating the vacuum at the start of the feed cycle and de-actuating the vacuum when the feed clutch is de-energized, and pulsing the positive air pressure separator by actuating and de-actuating the positive air pressure separator during the feed cycle.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a side view of a receiver sheet supply and feeding apparatus.

FIGURE 2 is a top plan view of a receiver sheet supply and feeding apparatus of Fig 1 with portions removed or broken away to facilitate viewing

FIGURE 3 is a side view of a cross-section of a receiver sheet supply and feeding apparatus taken along lines 3—3 of Fig. 2.

FIGURE 4 is a side cross-sectional view of a portion of a receiver sheet supply and feeding apparatus,

FIGURE 5 is an end view of a portion of the receiver sheet supply and feeding apparatus, taken along the lines 5—5 of Fig. 3.

FIGURE 6 is an end view of a portion of the receiver sheet supply and feeding apparatus, taken along the lines 6—6 of Fig. 3.

DETAILED DESCRIPTION

The US Patent # 5,344,133 "Vacuum belt feeder having a positive air pressure separator and method of using a vacuum belt feeder " by Jantsch et al, describes an apparatus which uses both vacuum and positive pressure air pressure to separate and acquire the top sheet of a supply stack. In this invention, both the vacuum line and the positive air pressure line are routed through valves, which valves are used to control the flow of vacuum and positive air. During typical operation of a printer/copier which uses the apparatus described in US Patent # 5,344,133, both the vacuum valve and the positive air pressure valve are open during the feed cycle, and closed when the printer/copier is not feeding from that particular supply.

Following is a detailed description of the drawings which show the vacuum belt feeder with positive air pressure separator as described in US Patent # 5,344,133. Although this system is described in detail, the present invention is not limited to use in this particular system. Any printer/copier which uses a combination of vacuum and positive air pressure to lift and separate the top sheets from a feed stack may make use of this invention.

The detailed description is written to a top feed vacuum corrugated feed device, but the present invention is also useful for a bottom feed vacuum belt feed device. In the case of a bottom feed device, instead of separating the top sheet, the vacuum with the airknife would be separating the bottom sheet.

Various aspects of the invention are presented in Figures 1-6 which are not drawn to scale and in which like components are numbered alike. Referring now to Figures 1-2, a receiver sheet supply and feeding apparatus are shown. The receiver sheet supply and feeding apparatus designated generally by the numeral **10**, includes an open hopper **12** and an elevating platform **14** for supporting a stack of sheets. A sheet stack **15** supported on the platform 14 contains individual sheets suitable for serving as receiver sheets for having reproductions formed thereon in a copier or printer device.

The sheet stack-supporting platform **14** is supported within the hopper **12** for substantially vertical elevational movement by a lifting mechanism. The lifting mechanism serves to raise the platform **14** to an elevation for maintaining the topmost sheet in the stack at a predetermined level during operation. Maintaining the topmost sheet at the predetermined level is accomplished by a sheet detection switch **80** (see Fig 5), or multiple switches, which controls the operation of a motor for actuating the lifting mechanism to raise the platform until a switch or switches is activated.

A sheet feed head assembly **30** is located in association with the hopper **12** so as to extend over a portion of the platform **14** in spaced relation to a sheet stack **15** supported thereon. The sheet feed head assembly **30** includes a ported plenum **32** connected to a vacuum source **31** through a vacuum valve **38,** and an airknife **40** connected to a positive pressure air source **41** through a positive pressure valve **60.** A positive pressure airjet from the airknife **40** levitates the top sheets in the supported sheet stack **15.** Vacuum at the plenum **32** is effective through the plenum ports **33** to cause the topmost levitated sheet from the stack to thereafter be acquired at the plenum **32** for separation from the sheet stack **15.** Additional positive air pressure jets from the airknife **40** assure separation of subsequent sheets from the acquired topmost sheet.

A vacuum valve **38** (see Fig 5) is used to control the operation of the vacuum and to limit the vacuum level. Thus during a feed cycle, the valve will be open so as to levitate the top sheet in the stack. In a preferred method of operation, the opening and closing of the vacuum valve is timing based, however, valve operation may also be controlled by other methods, such as a pressure or a mechanically activated switch. For example, a switch may be attached to the plenum **32** to detect when a sheet has been acquired. A signal provided by the switch on detection of sheet acquisition may be utilized to control operation of various components of the sheet feed head assembly **30**, such as timing of activations or setting of air flow levels, to optimize operation for a particular type (size) of sheet to be fed from the sheet supply and feeding mechanism **10**. When the vacuum is said to be "actuated", this means that the vacuum valve **38** is open. When the vacuum is said to be "de-actuated" this means that the vacuum valve **38** is closed.

The belts **36** are selectively driven by energizing a feed clutch (not shown), in a direction to remove the acquired sheet from the area above the sheet stack **15** and transport the sheet in the feed direction along a travel path to a downstream transport, such as a driven feed nip roller pair **50.** The nip roller pair **50** is driven by a motor. A gear **52** is rotatably mounted on a shaft (not shown) supporting one roller of the nip roller pair **50**. A clutch **56** is selectively activated to couple the gear **52** to the shaft **54** for rotation with the shaft. An intermediate gear **58** is in mesh with the gear **52** and a gear (not shown) coupled to one of the belt rollers **39**. Accordingly when the clutch **56** is engaged, the belts **36** will be driven so as to feed an acquired sheet such that the acquired sheet is transported from the sheet stack **15** and is thereafter available for any further processing, such as receiving a reproduction from a copier or printer.

The airknife **40** comprises a first air jet arrangement **42** and a second air jet arrangement **44**. The first air jet arrangement incorporates a single nozzle **43** in fluid communication with a source of positive pressure air **41**, for example a range of 4-10 inwg in certain embodiments. The chambers which are part of the first air jet arrangement **42** and the second air jet arrangement **44** may be

separate chambers, or may be combined into one larger chamber. The nozzle **43** directs a positive pressure air stream at the sheet stack, in the center of the lead edge, to fluff the top sheets in the stack to bring the topmost sheet into association with the sheet feed head assembly **30** where it can be acquired by vacuum, at the plenum **32**.

The second air jet arrangement **44** incorporates a plurality of nozzles **46** fluid communication with the source of positive pressure air **41**. The nozzles **46** are aimed slightly downstream of the aimpoint for the first air jet nozzle **43**. The purpose of the second air jet arrangement **44** is to separate any sheets adhering to the topmost sheet acquired by the sheet feed head assembly **30**.

A positive pressure air valve **60** is used to control the flow of positive pressure air through the airknife **40**. When the positive air pressure separator **40** is actuated, this means the positive air pressure valve **60** is open. When the positive air pressure separator **40** is de-actuated, this means the positive air pressure valve **60** is closed. However, when the positive air pressure valve **60** is closed, that does not necessarily mean that there is no positive pressure airflow. In a preferred design, the positive air pressure valve **60** allows some airflow even when closed (does not close all the way). One commonly used valve design allows about one third of the airflow through an open valve to flow through when the valve is 'closed'.

Common practice for operation of a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle, is to actuate the vacuum valve **38** and the positive air pressure separator **40** at the start of the feed cycle and de-actuated the vacuum valve **38** when the feed clutch is de-energized, but leave the positive air pressure separator **40** actuated throughout the feed cycle.

According to an aspect of the invention, this method is improved upon by pulsing the positive air pressure separator **40** by actuating and de-actuating the positive air pressure separator **40** during the feed cycle.

In a preferred embodiment of the invention, the positive air pressure separator **40** is actuated when the vacuum is actuated, and de-actuated before the feed clutch is energized. According to this aspect of the invention, the

positive air pressure separator is actuated during the acquisition phase, and de-actuated during the transport phase.

In a further preferred embodiment, the positive air pressure separator **40** is actuated when the vacuum is actuated, and is de-actuated approximately 50 milliseconds before the feed clutch is energized. This time may be optimized for different operating feed rates, for example it may need to be less for higher speed feeds. By pulsing the positive air pressure separator **40**, the high pressure achieved may be higher, and the low pressure (flow when the positive air pressure valve **60** is 'closed') may be lower. This means that during the acquisition phase, when the high pressure is needed to separate the sheets, higher pressure is available. During the transport phase, when higher pressure causes problems, the pressure is lower because the positive air pressure separator **40** is de-actuated. This allows the receiver sheet supply and feeding apparatus **10** to function better for heavier papers, due to the higher pressure during acquisition. It also allows the receiver sheet supply and feeding apparatus **10** to work better for lighter papers, due to the lower pressure during transport. Thus this invention opens the operating window of the receiver sheet supply and feeding apparatus **10.** This control may allow the high air level to increase as much as by a factor of two without significantly impacting feed performance on light paper.

Also, on copiers/printers with multiple sheet supplies, this invention enables a smaller blower to do the same job because the positive air pressure separator **40** is not actuated throughout the feed cycle.

According to an aspect of the invention, a method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle comprises opening the vacuum valve **38** and the positive pressure air valve **60,** closing the positive pressure air valve **60,** energizing the feed clutch on the belt feeder, de-energizing the feed clutch, and closing the vacuum valve **38.**

What is claimed is:

1. In a method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle wherein said vacuum and said positive pressure air are controlled by a vacuum valve and a positive air pressure valve respectively, wherein the paper is taken away by a belt which is activated when a feed clutch is energized, wherein the vacuum is actuated at the start of the feed cycle and de-actuated when the feed clutch is de-energized, the improvement comprising:

pulsing the positive air pressure separator by actuating and de-actuating said positive air pressure separator during the feed cycle.

2. The method of claim 1 wherein said positive air pressure separator is actuated when said vacuum is actuated, and said positive air pressure is de-actuated before the feed clutch is energized.

3. The method of claim 1 when the feed rate is 110 pages per minute, wherein said positive air pressure separator is actuated when said vacuum is actuated, and said positive air pressure is de-actuated approximately 50 milliseconds before the feed clutch is energized.

4. The method of claim 1 when the feed rate is 110 pages per minute, wherein said positive air pressure valve is closed approximately 50 milliseconds prior to the clutch being energized.

5. A method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle wherein said vacuum and said positive pressure air are controlled by a vacuum valve and a positive air pressure valve respectively, wherein the paper is taken away by a belt which is activated when a feed clutch is energized, comprising:

opening said vacuum valve and said positive pressure air valve;

closing said positive pressure air valve;

energizing the feed clutch on the belt feeder;

de-energizing the feed clutch ; and,

closing said vacuum valve.

ABSTRACT

A method of operating a vacuum corrugated belt feeder with positive air pressure separator during a feed cycle wherein the vacuum and the positive pressure air are controlled by a vacuum valve and a positive air pressure valve respectively, wherein the paper is taken away by a belt which is activated when a feed clutch is energized, comprising actuating the vacuum at the start of the feed cycle and de-actuated the vacuum when the feed clutch is de-energized, and pulsing the positive air pressure separator by actuating and de-actuating the positive air pressure separator during the feed cycle.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: ~~Assistant~~ Commissioner for Patents, Washington D.C. 20231, on

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Date of Deposit

Kathleen Bowen

Name of Applicant, Assignee, or Registered Representative

Signature

2/1/02

Date of Signature

Attorney Docket No. 2000009

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Michael T. Dobbertin and
Henry P. Mitchell, Jr.

Serial No. 09/688,001

Filing Date: October 14, 2000

For PULSED AIRKNIFE CONTROL FOR VACUUM CORRUGATED FEED SUPPLY

Examiner H. Grant Skaggs

Group Art Unit No. 3651

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In response to the office action mailed on November 1, 2001:

Claim 5 stands rejected under 35 U.S.C. 103 (a) as being unpatentable over Yoshida et al in view of Jantsch et al. Claims 1-4 stand rejected under 35

U.S.C. 103 (a) as being unpatentable over Yoshida et al in view of Jantsch et al, and further in view of Watkiss. Applicants respectfully submit that for the following reasons, claim 5 is not obvious by Yoshida et al in view of Jantsch et al under 35 U.S.C. 103 (a) and claims 1-4 are not obvious by Yoshida et al in view of Jantsch et al and further in view of Watkiss under 35 U.S.C. 103 (a). Applicants respectfully request reconsideration and further examination of claims 1-5.

In his rejection of claim 5, the examiner states that "Yoshida et al shows in Fig. 34 the timed operation of a vacuum belt feeder which includes first opening a vacuum valve 13 (at c) and a positive pressure air valve 22 (at a), closing the pressure air valve (at b), driving the belt feeder (14), closing the vacuum (at d), and then turning off the drive belt." Applicant respectfully submits that this is in error. Figure 34 in Yoshida et al does not show a positive pressure air valve either opening OR closing, what it does show is the position of the positive pressure air valve switching from position a to position b. The applicants respectfully request the examiner specifically cite where in the reference the positive pressure air valve closes during normal operation. The examiner cites Jantsch et al solely for the choice of a feed clutch as a known means for controlling the movement of the belt. Therefore, since neither Figure 34 of Yoshida et al nor Jantsch et al discloses the positive air pressure valve closing, Claim 5 is not obvious by Yoshida et al in view of Jantsch et al under 35 U.S.C. 103 (a), and applicants respectfully submit that rejection of claim 5 on this basis is in error, and request that the rejection on this basis be withdrawn.

The examiner states that it would be obvious to have the positive air pressure from valve 22 of Yoshida et al delivered in pulses as made obvious in Watkiss. As discussed above, Yoshida et al does not disclose valve 22 closing at all, merely switching position from position a to position b. It would not be obvious to combine the pulses from Watkiss into Yoshida et al, since Yoshida et al counts on the constant flow of positive pressure air, only in different directions, to separate sheets from the stack. Applicants respectfully request examiner to

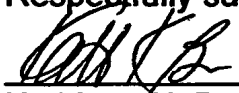
disclose the motivation to combine these references. Because there is no motivation to combine these references, in fact the function of Yoshida et al would seem to teach against it, applicant respectfully submits that claims 1-4 are not obvious by Yoshida et al in view of Jantsch et al and further in view of Watkiss under 35 U.S.C. 103 (a), and applicants respectfully request that examiner withdraw the rejection on this basis.

Examiner further states that with regard to claims 2-3, "merely having the air pressure separator (at a of 22 of Fig. 34) of Yoshida et al actuated at the same time as the vacuum is actuated (at 13 c of Fig 34) would require mere choice or expedience since the apparatus of Yoshida et al could work equally well with this type of timed operation". Applicants respectfully request the examiner provide a factual basis for the statement that having the air pressure separator of Yoshida et al actuated at the same time as the vacuum is actuated would require mere choice or expedience so applicants can adequately respond. In the absense of such, applicants respectfully submit that rejection of claims 2-3 on this basis is in error, and respectfully request rejection on this basis be withdrawn.

Examiner further states with regard to claims 3 and 4, that "to have the time between the closing of the valve 22 (at b) and the activation of the feed belt 14 of Yoshida et al to be approximately 50 milliseconds would require mere choice of expedience based on the timing of the feed rate of the sheets being fed". As discussed above, the valve 22 in Yoshida et al does NOT close, but merely switches position from a to b. Applicants respectfully request examiner to cite a factual basis for the statement that the time between the closing of the positive pressure air valve and the activation of the feed belt of 50 milliseconds is a "mere choice of expedience" so that applicants may adequately respond. In absence of this, applicants respectfully submit rejection of claims 3-4 on this basis is in error, and applicants respectfully request the rejection on this basis be withdrawn.

Applicants respectfully submit that claims 1-5 are allowable as written, and request that the rejections against them be withdrawn.

Respectfully submitted,



Kathleen K. Bowen, Esq.
Registration No. 42,352
Attorney for Applicants

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al in view of Jantsch et al.

Yoshida et al shows in Fig.34 the timed operation of a vacuum belt feeder which includes first opening a vacuum valve 13 (at c) and a positive pressure air valve 22 (at a), closing the pressure air valve (at b), driving the belt feeder (14), closing the vacuum (at d), and then turning off the drive to the belt. Yoshida et al does not teach that the vacuum can run after de-energizing the belt or that the belt can be energized and de-energized by way of a feed clutch. Merely having the vacuum of Yoshida et al run until after the feed belt is de-energized would require mere choice or expedience since it would appear that the apparatus run equally well with the vacuum turned off after the de-energizing of the belt (14). Further to have the feed belt activated and deactivated by way of a feed clutch would require the mere choice of a known means of controlling the movement of the belt as made obvious by Jantsch et al. Note 56 and column 5 lines 30-46 of Jantsch et al.

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al in view of Jantsch et al as applied to claim 5 above, and further in view of Watkiss.

It would be obvious in order to aid in the separation of the sheets from the stack to have the positive air pressure from valve 22 of Yoshida et al delivered in pulses as made obvious by Watkiss. Note air blast from nozzles 72 and column 5 lines 6-30 of Watkiss. In regard to claims 2-3 merely having the air pressure separator (at a of 22 of Fig. 34) of Yoshida et al actuated at the same time as the vacuum is actuated (at 13 c of Fig. 34) would require mere choice or expedience since the apparatus of Yoshida et al could work equally well with this type of timed operation. With regard to claims 3 and 4 to have the time between the closing of valve 22 (at b) and the activation of the feed belt 14 of Yoshida et al to be approximately 50 milliseconds would require mere choice or expedience based on the timing and feed rate of the sheets being feed.

Response to Arguments

4. Applicants' arguments filed February 1, 2002 have been fully considered but they are not persuasive.

Applicants argue that Yoshida et al does not teach that the time chart of Fig. 34 does not show that a positive pressure air valve either opening or closing but only shows position changing. However in the embodiments of Figs. 25-28 of Yoshida et al (to which the time chart of Fig. 34 could apply) it is shown that the pressure air valve 22 does move between the open position a and

the closed position b. With regard to claim 5 applicants argue that there is no motivation to combine Yoshida et al with Watkiss to provided air blast. However Watkiss in column 5 lines 21-23 clearly teaches that air blast aid in the separation of a top sheet. The motivation to combine the teaching of Watkiss with Yoshida et al is therefor clearly found in the references. Moreover, the examiner does not agree that the Yoshida et al apparatus counts on a constant flow of pressure air in different directions as Figs. 25-28 clearly show otherwise. With regard to the arguments concerning claims 2-3 and 3-4, the examiner as made a factual observation of the modified Yoshida et al apparatus and the burden is no on applicant to refute such observations.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ex. Skaggs whose telephone number is (703) 308-1113 and whose group fax number is (703) 305-7687.

hgs

H. GRANT SKAGGS
PRIMARY EXAMINER

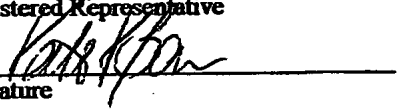
February 14, 2002

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Assistant Commissioner for Patents, Washington D.C. 20231, on

June 13, 2002
Date of Deposit

Kathleen K. Bowen
Name of Applicant, Assignee, or Registered Representative



Signature

June 13, 2002
Date of Signature

Attorney Docket No. 2000009

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Michael T. Dobbertin and
Henry P. Mitchell, Jr.

Serial No. 09/688,001

Filing Date: October 14, 2000

For PULSED AIRKNIFE CONTROL FOR VACUUM CORRUGATED FEED SUPPLY

Examiner H. Grant Skaggs

Group Art Unit No. 3651

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

In response to the office action mailed on February 15, 2001:

Claim 5 stands rejected under 35 U.S.C. 103 (a) as being unpatentable over Yoshida et al in view of Jantsch et al. Claims 1-4 stand rejected under 35

U.S.C. 103 (a) as being unpatentable over Yoshida et al in view of Jantsch et al as applied to claim 5, and further in view of Watkiss. Applicants respectfully submit that for the following reasons, claim 5 is not obvious by Yoshida et al in view of Jantsch et al under 35 U.S.C. 103 (a) and claims 1-4 are not obvious by Yoshida et al in view of Jantsch et al as applied to claim 5, and further in view of Watkiss under 35 U.S.C. 103 (a). Applicants respectfully request reconsideration and further examination of claims 1-5.

In his rejection of claim 5, the Examiner states that "Yoshida et al shows in Fig. 34 the timed operation of a vacuum belt feeder which includes first opening a vacuum valve 13 (at c) and a positive pressure air valve 22 (at a), closing the pressure air valve (at b), driving the belt feeder (14), closing the vacuum (at d), and then turning off the drive to the belt." Applicant respectfully submits that this is in error. Applicants argued that Figure 34 in Yoshida et al does not show a positive pressure air valve either opening OR closing, what it does show is the position of the positive pressure air valve switching from position a to position b. Examiner further states that "Merely having the vacuum belt of Yoshida et al run until after the feed belt is de-energized would require mere choice or expedience since it would appear that the apparatus run equally well with the vacuum turned off after the de-energizing of the belt (14)." Applicant respectfully submits that the Examiner's observation has not been established as fact, and there is no factual support in the record for such an observation. Applicant respectfully requests that Examiner supply a factual support in the record for such an observation so that applicant can adequately respond. In the final rejection the Examiner responded by stating that the timing chart of Figure 34 could apply to the embodiments of Figs. 25-28. Applicants respectfully submit this is in error.

The timing chart of Figure 34 could not apply to the embodiments of Figs. 25-28, because applying the embodiments of Figures 25-28 to the timing chart of Fig 34 does not produce the "blow amount of nozzle 19" presented in Figure 34. For example, in Figs. 25-38, when the pressure air valve 22 is in the closed position b there would be no airflow through nozzle 19. Figure 34 clearly shows

that when valve 22 is in position b that there is non-zero airflow Q1 in nozzle 19; and further that the airflow through nozzle 19 is greater when the valve 22 is in position b than when it is position a. This clearly contradicts the Examiner's position that the timing chart of Figure 34 could apply to embodiments 25-28. Claim 5 is not obvious by Yoshida et al in view of Jantsch et al under 35 U.S.C. 103 (a), and applicants respectfully submit that rejection of claim 5 on this basis is in error, and request that the rejection on this basis be withdrawn.

Claims 1-4 stand rejected as being unpatentable over Yoshida et al in view of Jantsch et al as applied to claim 5 above, and further in view of Watkiss. As noted above, the combination of Yoshida et al in view of Jantsch et al as applied to claim 5 above is in error, as such applicants respectfully submit this rejection as stated is in error, and request that the rejection on this basis be withdrawn.

Examiner further states that "It would be obvious in order to aid in separation of the sheets from the stack to have the positive air pressure from valve 22 of Yoshida et al delivered in pulses as made obvious by Watkiss." In Yoshida et al the valve 22 is switched to position a, then the vacuum valve is opened, then valve 22 is switched to position b "to stop the injection of the air", and the convey belt is actuated. (see column 18 lines 1-8 and lines 37-44). In contrast, Watkiss has the positive air being pulsed "in synchronism with the operation of the vacuum device and the belt movement". Thus in Yoshida et al, the positive air is stopped when the belt is actuated, and in Watkiss the positive air is turned ON when the belt is actuated. Thus they directly conflict with each other, so not only is there no motivation to combine Yoshida et al and Watkiss, but it could not be done. Applicants respectfully submit that rejection of claims 1-4 on this basis is in error, and respectfully request rejection on this basis be withdrawn.

Examiner further states that with regard to claims 2-3, "merely having the air pressure separator (at a of 22 of Fig. 34) of Yoshida et al actuated at the same time as the vacuum is actuated (at 13 c of Fig 34) would require mere

choice or expedience since the apparatus of Yoshida et al could work equally well with this type of timed operation". Examiner further states that "Examiner has made a factual observation of the modified Yoshida et al apparatus and the burden is on applicant to refute such observations." Applicant respectfully submits that the Examiner's observation has not been established as fact, and there is no factual support in the record for such an observation. Applicant respectfully requests that Examiner supply a factual support in the record for such an observation so that applicant can adequately respond. Further, with regard to claim 2, the Examiner speaks to the limitation of having the positive air pressure separator actuated when the vacuum is actuated, however, the Examiner does not address the limitation of the "positive air pressure is de-actuated before the feed clutch is energized." If the Examiner is relying on the timing chart Figure 34 of Yoshida et al for this limitation, applicant respectfully submits that for the reasons stated in the above paragraph, Figure 34 of Yoshida et al is not applicable. In the absence of such, applicants respectfully submit that rejection of claims 2-3 on this basis is in error, and respectfully request rejection on this basis be withdrawn.

Examiner further states with regard to claims 3 and 4, that "to have the time between the closing of the valve 22 (at b) and the activation of the feed belt 14 of Yoshida et al to be approximately 50 milliseconds would require mere choice of expedience based on the timing of the feed rate of the sheets being fed". Examiner further states that "Examiner has made a factual observation of the modified Yoshida et al apparatus and the burden is on applicant to refute such observations." Applicant respectfully submits that the Examiner's observation has not been established as fact, and that there is no factual support in the record for such an observation. Applicant respectfully requests that Examiner supply a factual support in the record for such an observation so that applicant can adequately respond. In the absence of such, applicants respectfully submit that rejection of claims 3-4 on this basis is in error, and respectfully request rejection on this basis be withdrawn.

Applicants respectfully submit that claims 1-5 are allowable as written, and request that the rejections against them be withdrawn.

Respectfully submitted,

Kathleen K. Bowen, Esq.
Registration No. 42,352
Attorney for Applicants

ART UNIT	PAPER NUMBER
	7

DATE MAILED:

Below is a communication from the EXAMINER in charge of this application

COMMISSIONER OF PATENTS AND TRADEMARKS

ADVISORY ACTION

☒ THE PERIOD FOR RESPONSE:

a) ☒ is extended to run 4 months or continues to run _____ from the date of the final rejection

b) ☐ expires three months from the date of the final rejection or as of the mailing date of this Advisory Action, whichever is later. In no event however, will the statutory period for the response expire later than six months from the date of the final rejection.

Any extension of time must be obtained by filing a petition under 37 CFR 1.136(a), the proposed response and the appropriate fee. The date on which the response, the petition , and the fee have been filed is the date of the response and also the date for the purposes of determining the period of extension and the corresponding amount of the fee. Any extension fee pursuant to 37 CFR 1.17 will be calculated from the date of the originally set shortened statutory period for response or as set forth in b) above.

☐ Appellant's Brief is due in accordance with 37 CFR 1.192(a).

☐ Applicant's response to the final rejection, filed _____ has been considered with the following effect, but it is not deemed to place the application in condition for allowance:

1. ☐ The proposed amendments to the claim and /or specification will not be entered and the final rejection stands because:

   a. ☐ There is no convincing showing under 37 CFR 1.116(b) why the proposed amendment is necessary and was not earlier presented.

   b. ☐ They raise new issues that would require further consideration and/or search. (See Note).

   c. ☐ They raise the issue of new matter. (See Note).

   d. ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal.

   e. ☐ They present additional claims without cancelling a corresponding number of finally rejected claims.

   NOTE: _____

2. ☐ Newly proposed or amended claims _____ would be allowed if submitted in a separately filed amendment cancelling the non-allowable claims.

3. ☐ Upon the filing an appeal, the proposed amendment ☐ will be entered ☐ will not be entered and the status of the claims will be as follows:

   Claims allowed: _____
   Claims objected to: _____
   Claims rejected: _____

   However;

   ☐ Applicant's response has overcome the following rejection(s): _____

4. ☒ The affidavit, exhibit or request for reconsideration has been considered but does not overcome the rejection because the examiner deems the Final Rejection to be proper

5. ☐ The affidavit or exhibit will not be considered because applicant has not shown good and sufficent reasons why it was not earlier presented.

☐ The proposed drawing correction ☐ has ☐ has not been approved by the examiner.

☐ Other

H. Grant Skaggs 6/26/01

H. GRANT SKAGGS

Office Action Summary	Application No.	Applicant(s)
	09/688,001	DOBBERTIN ET AL.
	Examiner	Art Unit
	David H Bollinger	3653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *16*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al '066 in view of Jantsch et al.

Yoshida et al shows the timed operation of a vacuum belt feeder which includes first opening a valve 13 (at c) and a positive pressure air valve 22 (at a), closing the pressure air valve (at b), driving the belt feeder (14), closing the vacuum (at d), and then turning off the drive to the belt. Yoshida et al '066 fails to teach the vacuum can run after de-energizing the belt or that the belt can be energized and de-energized by way of a clutch. Merely having the vacuum of Yoshida et al '066 run until after the feed belt is de-energized would require mere choice or expedience sine it would appear that the apparatus run equally well with the

vacuum turned off after the belt (14) is de-energized. Further, to have the feed belt activated and deactivated by way of a clutch would require the mere choice of a known means of controlling the movement of the belt as made obvious by the teachings of Jantsch et al. Note 56 and column 5 lines 30-46 of Jantsch et al.

4. Claims 1 through 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al '066 in view of Jantsch et al as applied to claim 5 above, and further in view of Watkiss.

It would have been obvious to one of ordinary skill in the art to have the positive air pressure from valve 22 of Yoshida et al '066 delivered in pulses in order to aid in the separation of the sheets from the stack as made obvious by the teachings of Watkiss. Note the air blast from nozzles 72 and column 5 lines 6-30 of Watkiss. In regard to claims 2-3 merely having the air pressure separator (at a of 22 of Fig. 34) of Yoshida et al '066 actuated at the same time as the vacuum is actuated (at 13 c of Fig. 34) would require mere choice or expedience since the apparatus of Yoshida et al '066 could work equally well with this type of timed operation. With regard to claims 3 and 4 to have the time between the closing of valve 22 (at b) and the activation of the feed belt 14 of Yoshida et al '066 to be approximately 50 milliseconds would require mere choice or expedience based on the timing and feed rate of the sheets being fed.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David H Bollinger whose telephone number is 703-308-

1113. The examiner can normally be reached on Monday through Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Walsh, can be reached on 703-306-4173. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David H Bollinger
Primary Examiner
Art Unit 3653

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